

Amendment submitted in response
to Office Action mailed July 27, 2004
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Remarks/Arguments:

The Claims:

Claim 1 has been amended.

Claims 13-24 have been canceled.

Claims 25-36 have been added.

It is respectfully submitted that each and every feature recited in the amended claim and/or new claims is fully supported in the specification as filed. No new matter has been added.

Issues under 35 USC 103

The Examiner has rejected claim 1-11 and 13-23 under 35 U.S.C. 103(a) as being unpatentable over Li et al. (US 6,693,043B1, hereinafter "Li").

The Examiner has rejected claim 12 and 24 under 35 U.S.C. 103(a) as being unpatentable over Li and further in view of Miller et al. (US 6,432,832B1, hereinafter "Miller").

Applicant has amended independent claim 1 and recite in newly added independent claim 26 to claim the combination that includes, among other patentable features of the combination, the use of an optimal flow rate of fluorine-containing gas, which optimal flow rate is selected to leave a substantially uniform thickness of photo resist at the bottom of the trenches in both the dense region and the isolated region.

It is respectfully submitted that photo resist removal technique discussed in the primary reference Li is directed at a photo-resist strip application in which the photo resist is removed entirely. As such, there can be no concern for leaving a substantially uniform thickness of photo resist at the bottom of the trenches after the photo resist etch step ends since Li's photo resist etch aims to remove all photo resist.

In contrast, the claimed invention of amended claims 1 and 26 is directed toward a photo resist removal process wherein at least some photo resist remains at the bottom of the trenches after the photo resist etch is terminated. As such, it is important to select an optimal flow rate of fluorine gas to ensure that when the photo resist partial etch step ends, a substantially uniform thickness of the photo resist material remains at the bottom of the trenches in both the dense region and the thickness region.

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Note that while the substantially uniform thickness of remaining photo resist material is a result of the claimed method, such result is achieved by selecting an optimal flow rate of fluorine containing gas.

It is respectfully submitted that this selection feature in effect represents a "control knob" in the photo resist partial etch process, which control knob tunes the partial photo resist etch the selection of an optimal flow rate of fluorine containing gas to achieve the substantially uniform thickness of the photo resist material remaining at the bottom of the trenches in both the dense region and the thickness region after photo resist partial etching is terminated.

Miller neither discloses nor suggests the partial etching of photo resist using a selected optimal flow rate of fluorine containing gas such that a substantially uniform thickness of the photo resist material remains at the bottom of the trenches in both the dense region and the thickness region.

For these reasons and others, it is respectfully submitted that pending claims 1-12 and 25-36 are novel, non-obvious, and patentable over Li and Miller, taken alone or in combination.

In view of the foregoing, Applicants believe that all pending claims are allowable and respectfully request a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application the undersigned can be reached at (408) 257-5500.

If any petition is required to facilitate the entry of the present amendment, please consider this communication a petition therefor as well. The Commissioner is hereby authorized to charge any additional fees required to process this Amendment, or credit any over-payments that may apply, to our Deposit Account No. 50-2284 (Order No. LMRX-P029).

Respectfully submitted,

/Joseph A. Nguyen/
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